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US 5564248 A **US 4893961 A**
US 4411548 A **US 3989398 A**
US 20020078656 A1

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(54) Abstract Title: **Joist hanger with spacer elements located between the hanger and joist**

(57) A joist hanger comprises a shoe portion and a flange extending from the shoe, where in use the shoe portion is built into a supporting structure and spacer elements. The spacer elements may be in the form of integral internal shaping which in use corresponds to a web of an I beam. Alternatively, the hanger may have spacer elements which may be located between the walls of the shoe and the joist (Figures 5 and 6) or web of an I beam (Figure 2). Also, the spacer elements and the walls of the shoe may have complementary tongues and grooves to allow the elements to be secured to the walls. The hanger may be lined with an insulating sock. A method of incorporating the hanger into the structure is also claimed.

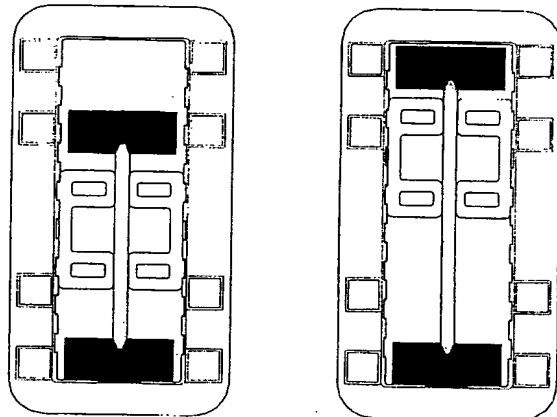


FIG 2

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

This print takes account of replacement documents submitted after the date of filing to enable the application to comply with the formal requirements of the Patents Rules 1995

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GB 2 393 459 A

CLAIMS

- 5 1. A joist hanger comprising a shoe for receiving and at least partially enclosing an end portion of an elongate joist; and a flange extending from the shoe, wherein, the shoe is arranged, in use, to be built in to a supporting structure of a building and wherein the joist hanger includes spacer elements that can be located between the inner side surface of the shoe and a web of an "I" shaped joist.
10
2. The joist hanger of any preceding claim, wherein the shoe includes separate spacer elements or integral internal shaping spaced to accommodate a web of an "I" shaped joist which can be selected from a group of joists having varying overall heights and flange widths.
15
3. The joist hanger of any preceding claim, wherein projections and/or channels and/or castellations and/or slots in at least one of the side surfaces of the shoe which are complimentary with projections and/or channels and/or castellations and/or slots in at least one of the side surfaces of the spacer elements.
20
4. The joist hanger of any preceding claim, wherein the spacer elements have slits within their profile to facilitate cutting to predetermined vertical dimensions.
25
5. The joist hanger of any preceding claim, wherein the spacer elements have a rectangular cross section for providing spacers between the shoe and the side of solid sawn rectangular joists or the top or bottom flanges of composite joists.
30

- 5
6. The joist hanger of any preceding claim, wherein a series of break out/removable sections is provided in the flanges to allow the passage of restraint straps which may be needed to connect a wall to a joist.
7. The joist hanger of any preceding claim, wherein at least one rib is positioned in at least one outer face of the shoe for providing a key with mortar within a wall.
- 10
8. The joist hanger of any preceding claim, wherein bearing flanges extend parallel or perpendicular to the upper and/or lower surfaces of the shoe to provide a surface area for bearing onto a wall.
- 15
9. The joist hanger of any preceding claim, wherein the shoe is tapered in width from the mouth to the end surface for allowing the gap between separate spacer pieces to increase or decrease as they move out of or into the hanger respectively.
- 20
10. The joist hanger of any preceding claim wherein the separate spacer elements are for attachment to the top and/or bottom of a joist.
- 25
11. The joist hanger of any preceding claim, wherein a strap detail is included for connecting a joist to the hanger.
12. The joist hanger of any preceding claim, wherein a removable slot is positioned in the the lower surface of the shoe to allow passage of a restraint strap.
- 30
13. The joist hanger of any preceding claim, wherein the shoe is arranged, in use, such that a lower surface thereof sits on the supporting structure and loads carried by the joist are largely

transmitted to the supporting structure through said lower surface.

- 5 14. The joist hanger of any preceding claim, wherein in use, the supporting structure is built up around the outer periphery of the shoe, to box the shoe into position.
- 10 15. The joist hanger of any preceding claim, wherein the joist hanger is preferably arranged, in use, to have the shoe embedded within the supporting structure and the flange abutting an outer/inner surface of the supporting structure.
- 15 16. The joist hanger of any preceding claim, wherein the flange is arranged, in use, to sit flush against the supporting structure as a means of locating the joist hanger with respect to an inner/outer face of the supporting structure.
- 20 17. The joist hanger of any preceding claim, wherein the flange extends from an outer periphery of the shoe.
18. The joist hanger of claim 17, wherein the flange extends substantially at right angles from the points at which it joins the outer periphery of the shoe.
- 25 19. The joist hanger of any preceding claim, wherein the shoe is sized to receive a standard size of joist within it.
20. The joist hanger of any preceding claim, wherein the joist hanger comprises thermally insulating material, for example
30 plastics material.
21. The joist hanger of any of claims 1 to 19, wherein the joist hanger is formed of a metal or composite material.

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18

22. The joist hanger of claim 21, further comprising a lining of thermally insulating material.
- 5 23. The joist hanger of any preceding claim, wherein the flange comprise holes or other fixings for mounting the joist hanger system against an inner or outer face of the supporting structure.
- 10 24. A method of hanging a joist comprising placing a joist hanger according to any of the preceding claims over an end region of the joist and, thereafter, positioning the end region of the joist and the now associated joist hanger directly onto the supporting structure, such that a lower surface of the joist hanger sits on the supporting structure and the flange of the joist hanger sits flush against a side surface of the supporting structure.
- 15
25. The method of claim 24, wherein mortar is applied between the lower surface of the joist hanger and the supporting structure.
- 20
26. The method according to claim 25, wherein the supporting structure is built up around the joist hanger.
- 25 27. The method according to claim 26, wherein prior to associating the end region of the joist and the joist hanger, a thermally insulating sock is placed over the end of the joist.
- 30 28. A method for hanging joists, wherein a joist hanger according to any of claims 1 to 23 is first associated with a supporting structure of a building and, subsequently, an end region of a joist is positioned within the joist hanger.

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29. The method of claim 28, wherein the joist hanger is provided as part of a prefabricated unit of a supporting structure.
- 5 30. The method of claim 29, wherein the joist hanger and the supporting structure are integrally formed.
- 10 31. A method of hanging joists, wherein a joist hanger according to any of claims 1 to 23 is placed over an end region of a joist and passed into a gap formed in a supporting structure, the joist hanger being positioned such that a lower surface thereof sits on part of the supporting structure and the gap around the shoe is subsequently closed by building up the supporting surface around the joist hanger.
- 15 32. A joist hanger substantially as herein described with reference to figures 1 to 8 of the accompanying drawings.
- 20 33. A method of hanging a joist, the method being substantially as herein described with reference to figures 1 to 8 of the accompanying drawings.



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Application No: GB 0329963.3
Claims searched: all

Examiner: Joanne Pullen
Date of search: 21 January 2004

Patents Act 1977 : Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance	
X	1, 2, 8, 16-19, 21, 23 & 28	US 2002/0078656 A1	(SIMPSON STRONG-TIE) Figures 6, 7 and 13, paragraphs 70, 72, 79, 80 and 92.
X	1, 2, 8, 16-19, 21, 23 & 28	US 5564248 A	(UNITED STEEL PRODUCTS) Figures 6, 7, 9 and 12a-c, column 5 lines 10-15 and 26-43.
X	1, 2, 5, 8, 10, 16-19, 21, 23 & 28	US 4893961 A	(TRUS JOIST CORPORATION) Figure 4.
X	1, 2, 8, 16-19, 21, 23 & 28	US 4411548 A	(P.H. BOWMAN CO) Figure 2.
X	1, 2, 8, 16-19, 21, 23 & 28	US 3989398 A	(UNITED STATES GYPSUM CO) Figure 5.

Categories:

X Document indicating lack of novelty or inventive step	A Document indicating technological background and/or state of the art.
Y Document indicating lack of inventive step if combined with one or more other documents of same category.	P Document published on or after the declared priority date but before the filing date of this invention.
& Member of the same patent family	E Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO, & US patent documents classified in the following areas of the UKC^w:

E1D

Worldwide search of patent documents classified in the following areas of the IPC⁷ :

E04B

The following online and other databases have been used in the preparation of this search report :

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Application No: GB 0329963.3
Claims searched: all

Examiner: Joanne Pullen
Date of search: 21 January 2004

Online: EPODOC, WPI, JAPIO



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REGISTER ENTRY FOR GB2393459

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Title JOIST HANGER

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Classified to

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E04B

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New Enquiry

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